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MINERALOGICAL ABSTRACTS

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Arising from a decision taken at the meeting of the INTERNATIONAL MINERALOGICAL ASSOCIATION in Copenhagen in 1961 the Mineralogical Societies of America and Great Britain agreed to issue a joint statement to National Societies adhering to the Association inviting each Society to organize contributions of abstracts of papers published in the journals of its country on subjects relevant to *Mineralogical Abstracts*. This invitation was issued and has brought a gratifying response. Members of Societies which have agreed to co-operate in this way are entitled to receive *Mineralogical Abstracts* for their personal use at a reduced rate of subscription on application, *which must be made through their National Society*. The countries now co-operating include: AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CZECHOSLOVAKIA, DENMARK, FINLAND, FRANCE, GERMANY, INDIA, ISRAEL, ITALY, JAPAN, NETHERLANDS, NEW ZEALAND, NORWAY, PAKISTAN, PORTUGAL, SOUTH AFRICA, SPAIN, SWEDEN, SWITZERLAND.

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ABBREVIATIONS AND SYMBOLS

M.M. . . Mineralogical Magazine : M.A. . . Mineralogical Abstracts : A.M. . . American Mineralogist

CHEMICAL & PHYSICAL

CHEMICAL

atomic absorption spectroscopy	AAS
cation-exchange capacity	c.e.c.
chemical analysis	chem. anal.
concentrated	conc.
differential thermal analysis	DTA
dilute	dil.
disintegrations per minute	d.p.m.
equivalent U_3O_8	eU_3O_8
ethylenediaminetetra-acetic acid	EDTA
heat of formation (absolute temperature subscript)	ΔH_f°
hydrogen ion conc. acidity	pH
insoluble residue	insol. res
isotopes, e.g.	$^{40}Ar, ^{40}K$
loss on ignition	ign. loss
milliequivalent	me.
microgramme	μg
million-years	m.y.
neutron activation analysis	NAA
not determined	n.d.
not found	nt. fd.
not present	nil
parts per million	p.p.m.
rare earths	TR or RE
standard mean ocean water	SMOW
strength of solution, normal	N
———molar	M
substances in ionic state	
anions, e.g.	Cl^-, SO_4^{2-}
cations, e.g.	K^+, Fe^{3+}
thermogravimetric analysis	TGA
trace	tr.
X-ray powder diffraction	XRD
X-ray fluorescence analysis	XRF

CRYSTALLOGRAPHIC & STRUCTURAL

Ångstrom unit (10^{-8} cm)	Å
crystal axes	a, b, c
— face indices	(hkl)
— form indices	{hkl}
— zone indices	[hkl]
indices of X-ray diffractions	hkl
intensity	I
— relative	I/I_0
interplanar spacing	d
mica structural polymorphs	$1M_1, 2M_1$
Siegbahn units	kX
space group. These words are written in full	
unit cell, formula units	Z
——repeat distances	a, b, c
——reciprocal lattice lengths of edges	a^*, b^*, c^*
——interaxial angles direct lattice	α, β, γ
———reciprocal lattice	$\alpha^*, \beta^*, \gamma^*$

OPTICAL

dispersion, e.g.	$r > v$
transmission electron microscopy	EM
extinction angle, e.g.	$\gamma:c$
infrared	IR
optic axial angle	2V
—— plane	O.A.P.
refractive index, in text	refr. ind.
—— of isotropic mineral	n
refractive indices	
of uniaxial mineral	ω, ϵ
of biaxial mineral	α, β, γ
scanning electron microscopy	SEM
sign of biaxiality	
negative	$2V_a$ or —
positive	$2V_c$ or +
ultraviolet	UV

PHYSICAL

calculated	calc.
calorie	cal.
calorie, large	kcal.
cycles per second	c/s
degree centigrade	$^\circ C$
density	D (quote units)
—, relative, e.g.	D_2^0
electron paramagnetic resonance	e.p.r.
gramme	g
hardness	H.
kilobar (10^8 Pa)	kbar
melting-point	m.p.
micron (10^{-4} cm)	μm
nanometre (10^{-7} cm)	nm
natural remanent magnetization	n.r.m.
pounds per square inch	lb/in. ²
pressure	P
soluble	sol.
specific gravity, terms of reference	
not known	sp. gr.
temperature	T
Vickers hardness number	VHN
wavelength	λ

SYMBOLS

approximately equal to	$\sim$
equal to	=
equal to or greater than	$\geq$
equal to or less than	$\leq$
greater than	>
less than	<
not equal to	$\neq$
parallel to	$\parallel$
per cent	%
per mile	$\%_{mi}$
perpendicular to	$\perp$
proportional to	$\propto$

ABBREVIATIONS USED IN REFERENCE TO PUBLICATIONS

Abhdl.	Abhandlungen	Gesell.	Gesellschaft	Razv.	Razvedka = survey
Abstr.	Abstract, -s	Govt.	Government	Rec.	Records
Abt.	Abteilung			Ref.	References, referata
Acad., Accad., Akad.	Academy, & equiv.	Hdbh.	Handbuch	Rend.	Rendiconti
Adv.	Advancement	Illustr.	Illustrat-ed, -ions	Repb.	Republic
Agric.	Agricultur-al, -e	Imp.	Imperial	Rept.	Report(s)
Anal.	Analy-st, -tical, &c.	Industr.	Industr-ial, -y	Res.	Research
Ann., An.	Annals, Anales, & equiv.	Inform.	Information	Reserv.	Reserves
Anorg.	Anorganisch	Inst.	Institute, institution, & equiv.	Resrcs.	Resources
Appl.	Applied	Instr.	Instruments	Rdsch.	Rundschau
Arch.	Archives	Int.	Interior	Rev.	Review
Asoc., Assoc.	Association, & equiv.	Intern.	International	Roy.	Royal, & equiv.
Astron.	Astronomical	Invest.	Investigations		
		Issl.	Issledovaniye = investigation	Sborn.	Sbornik = magazine
Bd.	Band	Ist.	Istituto	Sch.	School, Schule
Beitr.	Beiträge	Izd.	Izdanie = publication	Sci.	Science
Ber.	Bericht-e	Izvest.	Izvestiya	Sect.	Section
Berg.	Bergwesen			Sedim.	Sedimentary
Bol., Boll., Bull.	Bulletin, & equiv.	Jahrb.	Jahrbuch	Ser., sér.	Series, & equiv.
B.R.G.M.	Bur. Rech. Géol. Minières, France	Jahresb.	Jahresbericht	Serv.	Service
Bur.	Bureau	Jorn., Journ.	Journal, & equiv.	Sitzb.	Sitzungsbericht
				Skr.	Skrift, -en -er
Ceram.	Ceramic, & equiv.	Khim.	Khim-ie, &c.	Soc.	Society, & equiv.
Chem., Chim.	Chemi-cal, -stry, & equiv.	Kl.	Klasse	Sondbd.	Sonderband
Cien.	Ciencia, -s	Krist.	Kristallographie, &c.	Spec., Spez.	Special, & equiv.
Circ.	Circular			Stand.	Standard(s)
Cl.	Classe	Lab.	Laboratory	Stn.	Station
Com.	Comisión	Lit.	Literary	Suppl.	Supplement
Comm.	Commission			Surv.	Survey, -or
Conf.	Conference, & equiv.	Mag.	Magazine	Symp.	Symposium
Congr.	Congres, & equiv.	Mat., Math.	Mathematical, & equiv.		
Contr.	Contributions	Medd.	Meddelelser	Tab(s).	Table(s), tabellen
C.R.	Comptes Rendus	Mem., Mém.	Memoir, -s, & equiv.	Techn.	Technologi-cal, -y
Cryst., Cryst.	Crystallograph-ical, -y & equiv.	Metall.	Metallurg-ical, -y	Tids(s)kr.	Tid(s)krift, -en
		Min.	Mineralog-ical, -ist, -y	Tijdschr.	Tijdschrift
Dept.	Department, & equiv.	Misc.	Miscellaneous	Trab.	Trabajos
Diss.	Dissertation	Mitt.	Mitteilungen	Trans.	Transactions
Divn.	Division	Mh.	Monatsheft	Transl.	Translat-ed, -ion
Dokl.	Doklady = C.R.	Mus., Muz.	Museum, & equiv.		
D.S.D.P.	Deep-Sea Drilling Programme			U.A.R.	United Arab Republic
Econ.	Economic	Nac., Nat., Naz.	National, & equiv.	Uch.	Uchenyye = learned
Educ.	Education	Natur.	Natur-al, -alist, & equiv.	Ucheb.	Uchebnyi = teaching
Eng.	Engineering	Natur-w, -v.	Naturwissenschaft, & equiv.	Unders.	Undersögelse, undersökning
Exped.	Expedition			Univ.	University, & equiv.
Exper.	Experimental				
Expl.	Exploration	Obraz.	Obrazovanie = education		
		Obshch.	Obshchestva = society	Verhdl.	Verhandlungen
Fac.	Faculty			Vidensk.	Videnskaps
Fig(s).	Figure(s)	Petr.	Petrolog-ical, -y, & equiv.	Volc., Vulk.	Volcanolog-ical, -y &c.
Fis.	Fiscale, fisico	Petrol.	Petroleum	Vses.	Vsesoyuznyi = All-Union
Fören.	Föreningen	Phil.	Philosophical, &c.	Vyshh.	Vyshshikh = higher
Förh.	Förhandlingar	Photos.	Photographs		
Fortsch.	Fortschritt, -e	Photomicros.	Photomicrographs		
		Phys.	Physic-al, -s, & equiv.	Wiss.	Wissenschaft
Gen.	General	Pl(s).	Plate(s)		
Geochem., chim.	Geochemi-cal, -stry, &c.	Polytech.	Polytechnic, & equiv.	Zap.	Zapiski = memoirs
Geogr.	Geograph-y, ical, &c.	Pract., Prakt.	Practical, & equiv.	Zav.	Zavodskaya = factory
Geol., géol.	Geolog-y, ical, -ist, & equiv.	Proc.	Proceedings	Zaved.	Zavedeni = institution
Geophys., geofis.	Geophysic-al, -s, &c.	Prof.	Professional	Zeits.	Zeitschrift
		Prospect.	Prospecting	Zhurn.	Zhurnal = journal
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 Zwieselite, *Germany*, *Bavaria*, *Hagendorf*, IR data, electron photomicrographs, 82M/2138

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